

TRICHLOROETHYLENE

Also known as: Trichloroethene, Ethylene trichloride, TCE, Algylen, Penzinol, Chlorilen
Chemical reference number (CAS): 79-01-6

WHAT IS TRICHLOROETHYLENE?

Trichloroethylene (TCE) is a man-made chemical that does not occur naturally in the environment. It's a pale blue nonflammable liquid with a sweet smell that evaporates easily. The chemical is used as a metal degreaser. In homes, TCE may be found in typewriter correction fluid, paint, spot removers, carpet-cleaning fluids, metal cleaners, and varnishes.

Most TCE in air comes from metal degreasing activities associated with tool and automobile production. TCE can also enter ground water and surface water from industrial discharges or from improper disposal of industrial wastes at landfills. TCE has been found in many drinking water supplies in the United States, including Wisconsin.

HOW ARE PEOPLE EXPOSED TO TRICHLOROETHYLENE?

Workers in degreasing operations have the highest risk of exposure to TCE. People who live near factories that use TCE may be exposed to low TCE levels in the air.

Breathing: People who use TCE as a solvent (such as typewriter correction fluid or paint remover) may breathe significant amounts of the compound. Since TCE evaporates quickly, people who shower or bath in contaminated water may breathe the vapors.

Touching: TCE can be absorbed through the skin. People who use the compound without solvent-resistant gloves may be exposed.

Also, exposure can occur when people work with contaminated soil or bathe in contaminated water.

Drinking/Eating: TCE released onto soil readily enters groundwater. Therefore, people who drink water from wells located near TCE disposal sites may be exposed. Plants grown on contaminated soil do not absorb TCE. TCE has been detected at very low levels in many processed foods as a result of its use in equipment-cleaning.

DO STANDARDS EXIST FOR REGULATING TRICHLOROETHYLENE?

Water: The state and federal drinking water standards for TCE are both set at 5 parts per billion. We suggest you stop drinking water containing more than the standard. If levels of TCE are very high in your water (greater than 300 parts per billion), you may also need to avoid washing, bathing, or using the water for other purposes.

Air: No standards exist for the amount of TCE allowed in the air of homes. You can smell TCE when the level reaches 25 ppm. If you can smell the chemical, the level is too high to be safe.

The Wisconsin Department of Natural Resources regulates the amount of TCE that can be released by industries.

WILL EXPOSURE TO TRICHLORO-ETHYLENE RESULT IN HARMFUL HEALTH EFFECTS?

The following health effects may occur immediately or shortly after inhaling air that contains more than 50 ppm TCE:

- Heart problems including cardiac arrhythmias;
- Nausea and vomiting;
- Serious liver injury;
- Dizziness, headache, neurological problems; and
- Eye, nose and throat irritation.

The following health effects can occur after several years of exposure to TCE:

Cancer: There is no consistent evidence TCE exposure causes cancer in humans. However, animals exposed to high levels of the compound have developed liver, kidney, lung, testicular tumors, and leukemia.

Reproductive Effects: Animal studies indicate there may be an association between maternal exposure to TCE and specific heart defects in the offspring. Preliminary evidence in humans exposed to the chemical in their drinking water indicates similar effects. *Pregnant women should avoid exposure to TCE.*

Other Effects: Inhaling or drinking TCE-contaminated water causes kidney, liver, and lung damage in animal studies.

In general, chemicals affect the same organ systems in all people who are exposed. However, the seriousness of the effects may vary from person to person. A person's reaction depends on several things, including individual health, heredity, previous exposure to chemicals including medicines, and personal habits such as smoking or drinking.

It's also important to consider the length of exposure to the chemical; the amount of chemical exposure; and whether the chemical was inhaled, touched, or eaten.

CAN A MEDICAL TEST DETERMINE EXPOSURE TO TRICHLORO-ETHYLENE?

There are tests to detect TCE in the breath, urine, and blood of people exposed to high levels of the compound within the previous 24 hours. TCE cannot be measured in people when it results from long-term, low-level exposure. Those suspecting TCE exposure over a long period of time should contact their physician. Blood chemistry analyses which include liver and kidney function tests may be helpful.

Seek medical advice if you have any symptoms that you think may be related to chemical exposure.

This fact sheet summarizes information about this chemical and is not a complete listing of all possible effects. It does not refer to work exposure or emergency situations.

FOR MORE INFORMATION

- Poison Control Center, 800-222-1222
- Your local public health agency
- Division of Public Health, BEOH, 1 West Wilson Street, Rm. 150, Madison, WI 53701-2659, (608) 266-1120 or Internet: <http://dhfs.wisconsin.gov/eh>



Prepared by the
Wisconsin Department of Health and Family Services,
Division of Public Health, with funds from
ATSDR - PHS, USDHHS

(POH 4353 Revised 12/2000)